

Appendix J

Sediment Testing Letter

Project: Dredge

Since your application proposes a dredge project that requires sediment testing, one of the following alternatives must be selected to continue processing the file:

- 1) Conduct sediment testing, as required.
- 2) Revise the application to propose the dredge material to remain in an upland area on site outside of wetland or floodplain areas, with clean cover, and provide a signed restrictive covenant prior to permitting to prevent movement of the dredge material off site, as well as any other restrictions the WHMD deems necessary.
- 3) Dispose the dredge material in a Type II landfill or an U.S. Army Corp of Engineers Confined Disposal Facility (USACE CDF).
- 4) Supply previous data from the site tested within the last 10 years which demonstrates the dredge materials are below the criteria listed in the WHMD Review Criteria and Method Detection Limits ("clean" test data).
- 5) Countersign a permit which includes an environmental liability paragraph, and the project is for less than 1000 CY of dredge material total.

Please review the attached letter for further explanations and indicate, in writing, how you would like to proceed.

If option 1 is chosen or it is determined by the DEQ that your project will require sediment testing, your application will remain incomplete until the testing results are provided.

If options 2 or 3 are chosen your application and drawings must be revised to accurately depict the revision to the proposed project.

If option 5 is chosen provide a statement that you intend to countersign the permit, if issued, which includes the environmental liability paragraph.



JENNIFER M. GRANHOLM
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING



STEVEN E. CHESTER
DIRECTOR

TO: Permit Applicant
FROM: Geological and Land Management Division
SUBJECT: Sediment Testing for Dredging

If the Geological and Land Management Division (GLMD) is able to permit your dredging project, dredge material characterization is required by the Department of Environmental Quality (DEQ).

Dredge material may generally be placed on-site with clean cover and a deed restriction without testing. On-site means an upland location adjacent and contiguous to the lake or stream where dredging occurs, and is under the same ownership. If you wish to dispose of the material on-site with clean cover and a deed restriction, you should contact your nearest GLMD office to obtain the required Restrictive Covenant forms.

For dredge projects less than 1,000 cubic yards in volume, in areas that are not designated Areas of Concern, sediment testing may be waived if you countersign the permit with a pollution liability statement. Countersignature of the liability statement makes you aware that by not testing the material, you could be accepting liability for contamination of upland properties. In this situation no restrictive covenants are required.

For all other projects, if you plan to place dredge material upland, outside a licensed Type II landfill, or confined disposal facility (CDF), testing of the sediments will be required to determine if the dredge material is contaminated and considered a solid waste. The testing is required pursuant to Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), and its administrative rules.

If you believe that the bottom sediments are sand (95 percent or more of the particles remain on a No. 200 sieve), then conduct a sieve grain size analysis on a minimum of six representatively sampled sediment samples using U.S. Standard sieve numbers 10, 40, 100, and 200. Report the results for each of the discrete sample locations as a mass percentage of retained sediments. If the mass percentage retained on the No. 200 or larger screens is 95 percent or greater, no additional sediment testing may be required.

If the material is less than 95 percent sand, then according to Rule 118 the waste must be representatively sampled and tested for both total concentrations and leachable concentrations of contaminants (using the Toxicity Characteristic Leaching Procedure [TCLP] extraction or the Synthetic Precipitation Leaching Procedure [SPLP]). A minimum of six discrete samples for the first 10,000 cubic yards, and one additional sample for each 10,000 cubic yards thereafter must be analyzed for the following parameters:

- 12 Metals (arsenic, barium, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, and zinc),
- Polychlorinated biphenyls (PCBs), and
- Polynuclear aromatic hydrocarbons (PNAs).

You may wish to complete the total analyses first as an initial screen. If you choose this approach, be aware that if the total concentration for a given parameter exceeds 20 times the Type B groundwater value or the Type A Default Background Criteria for metals, the leachate test will be required. Quality control and quality assurance data from the laboratory should be included with the analytical results.

Tables containing the required method detection limits and review criteria has been enclosed for your reference.

If you have any questions related to the sediment testing requirements contained above, please contact Mr. Duane Roskoskey, Waste and Hazardous Materials Division (WHMD), at 517-335-4712, or you may contact your nearest GLMD district office. If you have questions regarding your permit, contact the appropriate district. A map showing the DEQ's GLMD district offices and their telephone numbers is enclosed.

Data may be sent directly to Mr. Duane Roskoskey, WHMD, DEQ, P.O. Box 30028, Lansing, Michigan 48909. Please provide a cover letter that references the DEQ file number.

Enclosure

Review Criteria and Detection Limits for Metals

The target method detection limits in soil should be used for the totals analysis, and the target method detection limit in water should be used for leachate analysis (TCLP/SPLP). The sample results are used to compute a 95% Upper Confidence Level (UCL) result for comparison to the review criteria. The total metals analysis UCL result is compared first to the Background Criteria. If all results are below background, no further analysis will be required. If the UCL result is above background, the UCL result is compared to the 20X Drinking Water Value and Direct Contact Value. If either of these values are exceeded, then the leachate testing is required and special disposal requirements are likely. The leachate analysis UCL result is compared to the Health-Based and Aesthetic Drinking Water Values. If the leachate UCL result is below the criteria and the totals analysis UCL result is above the Direct Contact Value, then the material may be authorized for unrestricted disposal. However, if the leachate UCL result is below the criteria and the totals analysis UCL result is above the Direct Contact Value, then the material will have restricted disposal requirements. Likewise, if the leachate analysis UCL result is above the applicable groundwater criteria, there also will be restricted disposal requirements. The method for computing the 95% UCL result and the method for establishing a site specific background value for a disposal area is provided in the Verification of Soil Remediation document at: <http://www.deq.state.mi.us/wmd/docs/vsr.html>.

Chemical	GROUNDWATER (ug/l,ppb)				SOIL (ug/kg;ppb)				Target Method Detection Limit in Soil (B)	Statewide Default Background (PPM)
	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value {A} [R 713]	Target Method Detection Limit in Water {B}	20X Drinking Water Value [R 711(2)]	20X GSI Value [R 711(5)]	Direct Contact Value [R 711(5)]			
Aluminum	ID	50 {H}	{D}	20	1,000 {C}	{C,D}	ID	500	6,900	
Antimony	2.4 {C}	NA	4,300 {C,Q}	5	48 {C}	86,000	91,000	500	NA	
Arsenic	0.02 {C}	NA	11 {C,Q}	1	0.4 {C}	220 {C}	720 {C}	100	5.8	
Barium	2,400 {C}	NA	630 {C}	200	48,000 {C}	12,600	1.8E+7	1,000	75	
Beryllium	51,000	NA	{D}	1	1.02E+06	{D}	2.10E+06	200	NA	
Boron	420 {C}	NA	{D}	10	8,400 {C}	{D}	1.6E+7	2,000	NA	
Cadmium	3.5 {C}	NA	0.64 {C,E}	0.2	70 {C}	{D}	1.3E+5	50	1.2	
Chromium III {J}	37,000 {C}	NA	77 {C}	50	7.4E+5	1,500 {C}	3.9E+8	2,500	18	
Chromium VI {J}	120 {C}	NA	7.3 {C}	1	2,400 {C}	150 {C}	1.2E+6	200	18	
Cobalt	1,000	NA	2,000	10	2.00E+03	4,00E+04	2.10E+06	500	6.8	
Copper	1,300 {C}	1,000	18 {C,E}	25	20,000 {C}	370 {C}	9.8E+6	1,000	32	
Iron	ID	300 {C}	{D}	100	6,000 {C}	{D}	ID	2,000	12,000	
<i>Lead</i>	4 {C,O}	NA	6.6 {C,E,Q}	3	80 {C}	130 {C}	4E+5	1,000	21	
Manganese	170 {C}	50 {C}	{D}	20	1,000 {C}	{D}	1.2E+6	2,000	440	
Mercury (Inorganic)	2.1 {C}	NA	0.0013 {C}	0.2	42 {C}	0.026 {C}	78,000	100	0.13	
Nickel	530 {C}	NA	57 {C,E}	50	11,000 {C}	1,100 {C}	2E+7	1,000	20	
Selenium	35 {C}	NA	5 {C,Q}	5	700 {C}	100 {C}	1.3E+6	500	0.41	
Silver	33 {C}	100	0.1 {C}	0.5	660 {C}	2 {C}	1.2E+6	500	1	
Thallium	0.58 {C}	NA	6.3 {C,Q}	2	12 {C}	130 {C}	22,000	500	NA	
Vanadium	61 {C}	NA	8 {C}	20	1,200 {C}	160 {C}	2.2E+6	1,000	NA	
Zinc	2,300 {C}	5,000 {C}	81 {C,E}	20	46,000 {C}	1,600 {C}	8.6E+7	1,000	47	

Review Criteria and Detection Limits for PNAs and PCBs

The target method detection limits in soil should be used for the totals analysis, and the target method detection limit in water should be used for leachate analysis (TCLP/SPLP). The sample results are used to compute a 95% Upper Confidence Level (UCL) result for comparison to the review criteria. The totals analysis UCL result is compared first to the 20X Drinking Water Value and Direct Contact Value. If either of these values are exceeded, then the leachate testing is required and special disposal requirements are likely. The leachate analysis UCL result is compared to the Health-Based and Aesthetic Drinking Water Values. If the leachate UCL result is below the criteria and the totals analysis UCL result is below the Direct Contact Value, then the material may be authorized for unrestricted disposal. However, if the leachate UCL result is below the criteria and the totals analysis UCL result is above the Direct Contact Value, then the material will have restricted disposal requirements. Likewise, if the leachate analysis UCL result is above the applicable groundwater criteria, there also will be restricted disposal requirements. The method for computing the 95% UCL result and the method for establishing a site specific background value for a disposal area is provided in the Verification of Soil Remediation document at: <http://www.deq.state.mi.us/wmd/docs/vsr.html>.

Chemical	GROUNDWATER (ug/l,ppb)				SOIL (ug/kg;ppb)			
	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value {A} [R 713]	Target Method Detection Limit in Water {B}	20X Drinking Water Value [R 711(2)]	20X GSI Value [R 711(5)]	Direct Contact Value [R 711(5)]	Target Method Detection Limit in Soil {B}
Acenaphthene	1,200	NA	{D}	5	24,000	{D}	4.5E+7	330
Acenaphthylene	25	NA	{D}	5	500	{D}	9.3E+5	330
Anthracene	7,000	NA	1.1E+5 {Q}	5	1.4E+5	2.2E+6	2.6E+8	330
Benzo(a)anthracene	0.0049	NA	0.31 {Q}	5	{G}	{G}	180	330
Benzo(b)fluoranthene	0.0049	NA	0.31 {Q}	5	{G}	{G}	180	330
Benzo(k)fluoranthene	0.0049	NA	0.31 {Q}	5	{G}	{G}	180	330
Benzog(h,i)perylene	25	NA	{D}	5	{G}	{G}	180	330
Benzo(a)pyrene	0.0049	NA	0.31 {Q}	5	{G}	{G}	180	330
Chrysene	0.0049	NA	0.31 {Q}	5	{G}	{G}	180	330
Dibenzo(a,h)anthracen	0.0049	NA	0.31 {Q}	5	{G}	{G}	180	330
Fluoranthene	840	NA	370 {Q}	5	17,000	7,400	3.1E+7	330
Fluorene	840	NA	14,000 {Q}	5	17,000	2.8E+5	3.1E+7	330
Indeno(1,2,3-cd)pyrene	0.0049	NA	0.31 {Q}	5	{G}	{G}	180	330
2-Methylnaphthalene	ID	NA	{D}	5	ID	{D}	ID	330
Naphthalene	250	NA	29	5	5,000	580	9.3E+6	330
Phenanthrene	25	NA	{D}	5	500	{D}	9.3E+5	330
Pyrene	520	NA	11,000	5	10,000	2.2E+5	1.9E+7	330
PCBs	0.018	NA	2E-5	0.2	{G}	{G}	1,000	330

SEDIMENT TESTING COMPANIES

This list is provided for informational purposes only and the State of Michigan does **not endorse any private company.**

Atwell-Hicks
6303 26 Mile Road
Washington, MI 48094
Telephone: 810-786-9800

EnviroLab
417 South Maple
Kalkaska, MI 49646
Telephone: 231-258-3423

Gosling Czubak
1280 Business Park Drive
Traverse City, MI 49686
Telephone: 213-946-9191

Martin Environmental, Inc.
12610 Newburgh Road
Livonia, MI 48150
Telephone: 734-591-1855

Fishbeck, Thompson, Carr & Huber, Inc.
1515 Arboretum Drive, S.E.
Grand Rapids, MI 49546
Telephone: 616-575-3824
-Fax 616-464-3993
E-Mail: info@ftch.com -- www.ftch.com

Trace Analytical Laboratories
2241 Black Creek Road
Muskegon, MI 49444
Telephone: 213-773-5998

Brighton Analytical, L.L.C.
2105 Plegg Drive
Brighton, MI 48116
Telephone: 810-229-7575

Lakeshore Environmental, Inc.
1810 F Industrial Drive
Grand Haven, MI 49417
Telephone: 616-844-5050

Clayton Group Services
22345 Roethel Drive
Novi, MI 48375
Telephone: 248-344-1770
Fax: 248-344-2655

Soil & Materials Engineers
2663 Eaton Rapids Road
Lansing, MI 48911
Telephone: 517-887-9181

Dell Engineering, Inc.
3352 128th Avenue
Holland, MI 49424
Telephone: 616-399-3500

G2 Consulting Group
1866 Woodslee
Troy, MI 8083
Telephone: 248-680-0400

Mackinac Environmental Technologies
300 Ferry Lane
St. Ignace, MI 49781
Telephone: 906-643-9948

Prein and Newhof
4910 Stariha Drive
Muskegon, MI 49441
Telephone: 231-798-0101
Laboratory No.: 616-364-7600

Sagasser & Associates
2238 South Otsego Avenue
Gaylord, MI 49735
Telephone: 517-732-5800

Westshore Consulting
2534 Black Creek Road
Muskegon, MI 49444
Telephone: 231-777-3447
Telephone: 231-723-2202
(Manistee Office)

Affiliated Researchers
3585 North US 23
Oscoda, MI 48750
Telephone: 517-739-5471

Artemis Environmental Inc.
417 Elliott Avenue
Grand Haven, MI 49417
ATTENTION: Dan Small
Telephone & Fax: 616-850-0273

Advanced Remediation Technologies, Inc.
50410 Lagae Street
New Baltimore, MI 48047
Telephone: 586-725-5189

Clayton Laboratory Services
22345 Roethel Drive
Novi, MI 48375
Telephone: 248-344-2652
Fax: 248-344-2655

Artemis Environmental, Inc.
417 Elliott Avenue
P.O. Box 311
Grand Haven, MI 49417
Telephone/Fax: 616-850-0273

CDM
215 South Washington Square
Suite 160
Lansing, MI 48933
Todd King
Telephone: 517-702-1213

Geo Trans Inc.
710 Avis Drive
Ann Arbor, MI 48108
ATTENTION: Erik Petrovski
Telephone: 734-213-4085
Fax: 734-213-5008

AAC Trinity, Inc.
38855 Hills Tech Drive, Suite 550
Farmington Hills, MI 48331
ATTEN JIM SHANNON
Telephone: 248-848-9656
E-Mail: jshannon@actrinity.com

Innovative Environmental Solutions, Inc.
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1743 142nd Avenue
P.O. Box 326
Dorr, MI 49323
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E-Mail: cbabcock@ies-environmental.com

Innovative Environmental Solutions, Inc.
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30685 Barrington Avenue, Suite 120
Madison Heights, MI 48071
Telephone: 248-307-0640
Fax: 248-307-0645

Environmental Consulting and Technology
719 Griswold Street, Suite 520
Detroit, MI 48226
ATTENTION: John Meara
Telephone: 313-963-6600
Fax: 313-963-1707
www.ectinc.com

Atten: Bette Premo
White Water Associates, Inc.
P.O. Box 27, 429 River Lane
Amasa, MI 49903
Telephone: 906-822-7889
Fax: 906-822-7977
E-Mail: bipremo@up.net
www.white-water-associates.com

SQS, Inc
7522 Baron Drive
Canton, MI 48187
Telephone: 734-459-3800

Environmental Testing Laboratories
3890 Huron River Drive, Suite 200
Romulus, MI 48174
Ms. Tammy Wall
Telephone: 734-955-6600
Fax: 734-055-6604

Joseph W. Berlin, P.E.
BLDI, Inc.
150 Fountain NE
Grand Rapids, MI 49503
Telephone: 616-459-3737
Fax: 459-5357
www.blodi.com

Driesenga & Associates, Inc
455 East 8th Street, Suite 100
Holland, MI 49423
Telephone: 616-396-0255
Fax: 616-396-0100
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9948 East Grand River Avenue
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James Smith
EnecoTech Midwest Inc.
39255 Country Club Drive, Suite B40
Farmington Hills, MI 48331
Telephone: 248-489-0809
Fax: 248-489-4184
www.enecotech.com

NTH Consultants, Ltd.
38955 Hills Tech Drive
Farmington Hills, MI 48331
Telephone: 248-553-6300
Fax: 248-324-5179
www.NTHConsultants.com

Tracy Miller
Driesenga & Associates, Inc.
4398 Roger B. Chaffee, Suite 200
Grand Rapids, MI 49548
Telephone: 616-249-3800
Fax: 616-249-3900
www.driesenga.com

Duncan Mein
Testing Engineers & Consultants
1343 Rochester Road
Troy, MI 48083
Telephone: 248-588-6200, Ext. 142
Fax: 248-588-6232
www.testingengineers.com

David VerSluis
Sierra Geological and Environmental
Consultants Inc
91 South Main Street
P.O. Box 136
Kent City, MI 49330
Telephone: 616-678-5157
Fax: 616-678-5149
www.sierraconsultants.net

Linnette McMonagle
URS Corp
34555 West 12 Mile Road
Farmington Hills, MI 48331
Telephone: 248-553-9449
Fax: 248-488-0416
www.urscorp.com

Mr. Adam Wygant
Wetland Waterfront Solutions, LLC
2831 Marion Road
Jackson, MI 49201
Telephone: 517-745-1699
wetlandwaterfront@att.net

Mr. Jon K. Erickson
Soils and Structures, Inc.
6480 Grand Haven Road
Muskegon, MI 49441
Telephone: 1-800-933-3959
Fax: 231-798-1383
E-Mail: jerickson@soilsandstructures.com
www.soilsandstructures.com

Mr. Paul Baerman
Wilcox Professional Services
111 West Edgewood Boulevard, Suite 7
Lansing, MI 48911
Telephone: 517-882-4359
Fax: 517-882-5137
www.wilcoxassociates.com

Mr. Roman Wilson
Lakeshore Environmental Inc.
803 Verhoeks Street
Grand Haven, MI 48416
Telephone: 616-844-5050
Toll Free Telephone: 1-800-844-5050
Fax: 616-844-5053
E-Mail: romanw@lakeshoreenvironmental.com
www.lakeshoreenvironmentalcompany.com

Patrick W. Doyle, Senior Project Manager
STS Consultants
914 West Baraga Avenue
Marquette, MI 49855
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Fax: 906-226-8371
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Walter Bolt
The Mannik & Smith Group, Inc.
15300 Rotunda Drive, Suite 306
Dearborn, MI 48120
Telephone: 313-271-2223
Fax: 313-271-3076
www.maniksmithgroup.com

James Tolbert
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5555 Glenwood Hills Pkwy SE
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Ferndale, MI 48220
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Fax: 248-399-2157
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Pat Kresnak
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Mr. Erik Petrovskis
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E-Mail: epetrovskis@geosyntec.com
www.geosyntec.com

If you wish to add your company to this list, please contact Carol Tyler at 517-335-6844, Land and Water Management Division. (Revised 10-27-05.)